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TextWithSurgeryPatients - A Research Hypothesis in Enhancing Education and Physical Assessment for Abdominal Surgical Patients

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Abstract. Medical surgical nurses may not have the time or resources to provide effective pre- and post-operative instructions for patients in today's healthcare system. And, making timely physical assessments following discharge from the hospital is not always straightforward. Therefore, the risk for readmission associated with post-surgical complications is a concern. At present, mobile healthcare technologies and patient care are precipitously evolving and may serve as a resource to enhance communication between the healthcare provider and patient. A mobile telephone text message (short message service [SMS]) intervention for abdominal surgical patients may foster effective education (communication) and timely self-reported physical assessment in the home environment hence preventing deleterious outcomes. The aim of this research proposal is to identify the feasibility of using a SMS intervention via smart phones to improve health outcomes via timely communication, reach large numbers of at-risk surgical patients and, establish and sustain uniform protocols in a cost-efficient manner.

Keywords. Text Messaging, Perioperative Nursing, Health Education, Mobile Technologies, Surgery

1. Introduction

During 2013 there were 51.4 million inpatient surgeries performed in the United States (U.S.) [1]. According to Weiss, Elixhauser and Steiner [2] the 2010 U.S. hospital readmission rates (30-day all cause readmissions) for appendectomy patients were 18,835 (6%), small bowel resections were 15,050 (18.1%) and, debridement of wound, infection or burns were 28,394 (19.1%). Prevention of these post-operative complications is critical in the improvement of clinical outcomes and minimizing healthcare costs following abdominal surgeries. Research conducted by Spalding [3] indicates patient education is effective in reducing anxiety by making the unknown familiar. Communication research indicates in general medicine "effective communication enhances patient compliance, satisfaction and medical outcome" [4, p.1].

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Brief in-person pre-and post-surgical teaching interventions may be effective in reducing complications and increasing healthy behaviours, but require resources that may not always be available to healthcare professionals. Mobile SMS may enhance facilitation of pre-operative reminders, pre- and post-surgical support and, the assessment of self-reported post-surgical healing in adult patients who have undergone abdominal surgery. Furthermore, patients' self-efficacy in healing, anxiety and pain levels may be assessed since these factors affect overall healing and well-being.

Eighty-three per cent of American adults own cell phones and three quarters (73%) of those owners report sending and receiving text messages [5]. Automated text messaging has been used to improve health behaviours associated with hazardous alcohol use in young adults [6], in diabetes care [7, 8], for asthma monitoring [9], in cigarette smoking cessation studies [10, 11], in monitoring posttraumatic stress disorder symptoms [12] and for maternal child health education [13]. However, efficacy remains unknown for its use in surgical patients' self-reported assessment and education. In the following, important reasons for designing a novel randomized controlled trial investigating the effectiveness of an SMS intervention to provide pre- and post-operative education and the assessment of post-operative symptoms are proposed.

2. Methods

2.1 Importance of communication

Today's communication between the patient and healthcare provider is an important reason to look at the novel use of a mobile telephone SMS intervention as an adjunct to traditional education and management of surgical patients. Sutcliffe and colleagues [14] report of the 70 mishap incidents identified in their study, communication and patient management ranked the highest when looking at the occurrence of medical errors. Communication transmission (exchange of information) is clearly a factor in the occurrence of medical errors; however, healthcare hierarchical positions play a significant role as well [14]. Therefore, when developing a SMS intervention it is critical to look at involving the whole healthcare team. Perhaps the development of the text messages to be transmitted to the patients in this proposed study would assist in the amelioration of hierarchical communications, make management of surgical patients more team-based and, be an avenue to intra-professionalism.

2.2 Patient centered healthcare and mobile technologies

Increasingly patients want to be involved in healthcare decisions [15] and mobile phone text messaging to encourage healthy behaviors and manage various health conditions are surfacing [16, 17, 18]. Moreover, the young adult generation uses SMS messaging more than email today. Mobile telephones delivering text messages via SMS may be used pre-operatively to deliver reminder messages regarding nutrition, exercise, surgical wound care, and medication usage. Post-operative care may be improved with the use of organized educational text messages the patient may look forward to receiving in order to enhance self-efficacy in the post-operative healing period. As well, the receiving of text messages from healthcare professionals may bolster the patients' emotional well being with the sense of being cared for in the privacy of the home.

2.3 Proposed study aim

The aim of this proposed study is to identify the short-term effectiveness, feasibility and suitability of a mobile telephone text message intervention (Text With Surgery Patients [TWSP]) to enhance education and timely physical assessment of adult abdominal surgical patients in natural home settings.

2.4 Design

The design of this proposed study is a stratified two-parallel-group randomized controlled trial comparing pre- and post-surgical education and physical assessment (usual care; control) with usual care and the TWSP program (intervention), sent by primary care nurses who will be blinded to the allocation of sequencing.

2.5 Setting and participants

The proposed setting is a teaching university hospital located in Northern California and, the recruited participants will consist of adults (males and females; 18-70 years) preparing for abdominal surgery (e.g. appendectomy, small bowel resection, etc.). Study eligibility will be based upon these participant characteristics: (1) consents to have abdominal surgery prior to recruitment; (2) has a functioning smart phone; (3) has knowledge of how to receive and send text messages; (4) speaks and reads English. Characteristics of participants at baseline, enrollment, and follow-up include: age, race/ethnicity, marital status, education, significant support figures at home, number of children under the age of 18, and technology skills.

2.6 Ethics

The proposed study will be presented and approved by the Institutional Review Board for the Protection of Human Subjects at the University of San Francisco and the hospital's ethics committee. All participants who are eligible, interested in the study, and consent to participate will complete consent and Health Insurance Portability and Accountability Act (HIPAA) agreement forms prior to the commencement of the study. All participants will receive routine pre- and post-surgical care.

2.7 Statistics

Calculating for an independent samples T-test, the total sample size for a small effect size (d=0.2); alpha level of 0.05; and a power level of 0.80 is N=620 (control n=310, intervention n=310). Descriptive statistics such as frequencies, proportions, and 95% confidence intervals will be calculated.

2.8 Procedure

Both groups will consent to and thoroughly complete a demographic survey at the surgeon's office during the pre-operative visit. Routine pre-operative education and educational resources (e.g. paper based instructions) will not be controlled for but noted when collecting the data. Randomized consented patients will receive a text message stating if they have been randomized to the control or intervention group prior to the commencement of the study. A telephone system will perform this initial text, thereby allowing for the surgical nurses to be blinded to who is in the sequencing of

randomization. Acknowledgement of this first text message will be required of the intervention participant in order to move forward and take part in the study. Intervention participants will have the option of enrolling in the TWSP program via texting a specific code to a designated phone number or enrolling online at the TWSP website. For both enrollment options the intervention participants will enter their surgery date and home zip code.

2.9 Measures

The primary intervention outcome will be participants' responses to pre- and post-surgical SMS containing educational/motivational content written by expert surgical nurses and physicians (e.g. Nothing per oral after midnight prior to surgical date) and, the secondary content will be responses to physical assessment questions (e.g. Is your surgical wound clean and dry?). The TWSP program messages will be delivered daily directly following the pre-operative visit at the surgeon's office (this time will vary) and for 14 days post-operatively. The intervention participants will receive a follow-up contact phone call by nurses delivering the text messages in order to gather information about the suitability of the TWSP program. If the hospital performs regular follow-up phone calls to all surgical patients then the control participants will receive the routine hospital based phone call, as well.

2.10 Incentives

The incentives to participate in the study will be a $10 gift card upon completing the initial demographic survey by both groups at the pre-operative visit. Upon completing the final follow-up phone call assessing the suitability of the TWSP program, intervention participants will be mailed a $20 gift card.

3. Results

The results of this study will be submitted to a peer-reviewed open-source healthcare professional journal for timely release to healthcare professionals.

4. Discussion

Education and physical assessment are two very important factors in the care of surgical patients. Mobile technologies, such as the cell phone, coupled with SMS may have potential to augment abdominal surgical patients' knowledge, motivation, and overall healing. Douglas and Free [19] determined mobile phone-based text messaging for smoking-cessation support is very economical and simultaneously affords emotional support. Randomized controlled trials have examined the use of text messages (SMS) and its role in the adoption of health-related behaviors or the management of diseases [20, 21]. However, the literature lacks the efficacy of a text message intervention for pre- and post-surgical patients' education and self-reported physical assessment. If adopted by the healthcare community, this novel use of mobile health messaging may help providers reach a larger population of surgical patients at a diminished cost. The presentation of this research proposal at the NI2016 conference will provide a field of peer discussion, suggestions, and constructive feedback.

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